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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/798,974	03/12/2004	Hideki Hatano	041514-5327	5347
55694	7590	12/11/2006	EXAMINER	
DRINKER BIDDLE & REATH (DC)			ANGEBRANNDT, MARTIN J	
1500 K STREET, N.W.			ART UNIT	
SUITE 1100			PAPER NUMBER	
WASHINGTON, DC 20005-1209			1756	

DATE MAILED: 12/11/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/798,974

Applicant(s)

HATANO ET AL.

Examiner

Martin J. Angebrannt

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 3/12/04, 7/26/04 & 1024/05.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-10 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-10 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
- 1) ☒ Certified copies of the priority documents have been received.
 - 2) ☐ Certified copies of the priority documents have been received in Application No. _____.
 - 3) ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)
Paper No(s)/Mail Date <u>3/12/04</u> . | 6) <input type="checkbox"/> Other: _____ |

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1. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

2. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

3. Claims 1-6 are rejected under 35 U.S.C. 102(b) as being fully anticipated by Furukawa et al. "Stoichiometric LiTaO₃ for dynamic holography in the near UV wavelength range", Jap. J. Appl. Phys., Vol 38 pt. 1 3B 1816-1819 (1999).

Furukawa et al. "Stoichiometric LiTaO₃ for dynamic holography in the near UV wavelength range", Jap. J. Appl. Phys., Vol 38 pt. 1 3B 1816-1819 (1999) describes the formation of nearly stoichiometric lithium tantalate crystals using the same process developed for lithium niobate where the Li/(Li+Ta) is estimated to be 0.4975. (page 1817/left column).

Claims 1-6 have been read to embrace the unrecorded crystal and that the exposure is an intended use.

The applicant may also wish to limit the claims to materials, which have not undergone a reduction treatment and are undoped. [see prepub at 0092].

4. Claims 1-6 are rejected under 35 U.S.C. 102(b) as being fully anticipated by STN Abstract of Kitamura "Breakthrough in ferroelectric single crystals for optical applications control of non-stoichiometric defects", Oyo Butsuri, Vol 69(5) pp. 511-517 (2000), dated 5/2000.

The STN Abstract of Kitamura "Breakthrough in ferroelectric single crystals for optical applications control of non-stoichiometric defects", Oyo Butsuri vol 69(5) pp. 511-517 (2000), dated 5/2000 describes the formation of nearly stoichiometric lithium tantalate and lithium niobate crystals. The abstract will be replaced with the actual document when it becomes available and the examiner notes that inventor Kitamura is the author and will be aware of the contents. The applicant may wish to submit a copy, with a translation if possible, to increase the pace of prosecution (in case a copy cannot be obtained by the examiner).

Claims 1-6 have been read to embrace the unrecorded crystal and that the exposure is an intended use.

The applicant may also wish to limit the claims to materials, which have not undergone a reduction treatment and are undoped.

5. Claims 1-7 and 9-10 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kitamura et al., JP 2001-004801 (machine translation and US 6670079 is an English equivalent).

Kitamura et al., JP 2001-004801 describes the formation of nearly stoichiometric lithium tantalate and lithium niobate crystals where the $\text{Li}(\text{Li}+\text{Ta})$ is 0.495 to 0.500 [0012] and the

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reduction does not take place [0008-0010]. These are doped with Tb and another element. This reference also described two color recording processes with respect to figure 1.

It would have been obvious to one skilled in the art to form crystals where the Li(Li+Ta) is 0.4974-0.4989 which is entirely bounded by the 0.495-0.500 range and make up 28% in the middle of the disclosed range described in the reference. Further it would have been obvious to use the two color processes with the resulting crystals to form more stable gratings and the grating is inherently a wavelength rejection filter.

6. Claims 1-10 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kitamura et al., JP 2001-004801, Furukawa et al. "Stoichiometric LiTaO₃ for dynamic holography in the near UV wavelength range", Jap. J. Appl. Phys., Vol 38 pt. 1 3B 1816-1819 (1999) or Abstract of Kitamura "Breakthrough in ferroelectric single crystals for optical applications control of non-stoichiometric defects", Oyo Butsuri, Vol 69(5) pp. 511-517 (2000), dated 5/2000, in view of Raklujic et al. '669.

Raklujic et al. '669 describe the recording of optical filters as wavelength multiplexed gratings in a single photorefractive crystal, either superimposed or spatially separated (9/41-57). Useful photorefractive crystals include lithium niobate and lithium tantalate (1/38-64).

For the embodiments of the claims not anticipated or rendered obvious above, It would have been obvious to use holographic gratings formation techniques with the holographic recording media of Kitamura et al., JP 2001-004801, Furukawa et al. "Stoichiometric LiTaO₃ for dynamic holography in the near UV wavelength range", Jap. J. Appl. Phys., Vol 38 pt. 1 3B 1816-1819 (1999) or Abstract of Kitamura "Breakthrough in ferroelectric single crystals for optical applications control of non-stoichiometric defects", Oyo Butsuri, Vol 69(5) pp. 511-517

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(2000) to form wavelength filters such as those taught by Raklujic et al. '669 with a reasonable expectation of forming useful wavelength filters based upon these being holographic recording materials and within those embraced by the teachings of Raklujic et al. '669.

7. Claims 1-10 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kitamura et al., JP 2001-004801, Furukawa et al. "Stoichiometric LiTaO₃ for dynamic holography in the near UV wavelength range", Jap. J. Appl. Phys., Vol 38 pt. 1 3B 1816-1819 (1999) or Abstract of Kitamura "Breakthrough in ferroelectric single crystals for optical applications control of non-stoichiometric defects", Oyo Butsuri, Vol 69(5) pp. 511-517 (2000), dated 5/2000, in view of Raklujic et al. '669, further in view of Psaltis et al. '126.

Psaltis et al. '126 describes the formation of a multichannel wavelength filter as illustrated in figures 1 and 4, where the different [0039,0052-0053]

In addition to the basis provided above it would have been obvious to modify the wavelength filters resulting from the combination of Kitamura et al., JP 2001-004801, Furukawa et al. "Stoichiometric LiTaO₃ for dynamic holography in the near UV wavelength range", Jap. J. Appl. Phys., Vol 38 pt. 1 3B 1816-1819 (1999) or Abstract of Kitamura "Breakthrough in ferroelectric single crystals for optical applications control of non-stoichiometric defects", Oyo Butsuri, Vol 69(5) pp. 511-517 (2000), dated 5/2000 with Raklujic et al. '669 by forming the gratings in parallel as shown in figures 1 and 4 of Psaltis et al. '126 based upon the direction to spatially separated gratings in Raklujic et al. '669.

8. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

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Hatano et al. '433, Kitamura et al. '294, Kitamura et al. '806 and Lee et al. '472 described holographic recording using lithium niobate (some with 2 color)

Fukuda et al. '117 teach formation of lithium tantalate in oxidizing conditions.

Imbrock et al., "Nonvolatile holographic storage in photorefractive lithium tantalate crystals with laser pulses", JOSA B vol. 16(9) pp. 1392-1397 (1999) teaches two color holography in lithium tantalite.

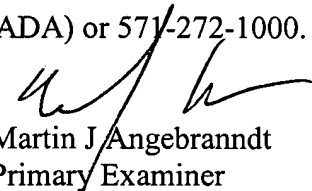
Wevering et al., "Relaxation of light induced absorption changes in photorefractive lithium tantalate crystals", JOSA B Vol. 18(4) pp. 472-478 (2001) teaches holographic recording in lithium tantalite and the use of two colors.

9. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Martin J. Angebrannt whose telephone number is 571-272-1378. The examiner can normally be reached on Monday-Thursday and alternate Fridays.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Mark Huff can be reached on 571-272-1385. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.



Martin J. Angebranndt
Primary Examiner
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12/6/2006